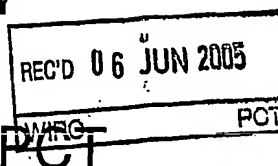


PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

28/1

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2005/000494

International filing date (day/month/year)
06.01.2005

Priority date (day/month/year)
06.01.2004

International Patent Classification (IPC) or both national classification and IPC
H01M10/40

Applicant
MOLTECH CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/000494

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/000494

**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	12,13,16,26,27
	No: Claims	1-11,14,15,21-25
Inventive step (IS)	Yes: Claims	
	No: Claims	1-27
Industrial applicability (IA)	Yes: Claims	1-27
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: US-A-5 882 812 (VISCO ET AL) 16 March 1999 (1999-03-16)
- D2: WO 99/19931 A (POLYPLUS BATTERY COMPANY, INC; CHU, MAY-YING;
DE JONGHE, LUTGARD, C; V) 22 April 1999 (1999-04-22)
- D3: US-B1-6 329 789 (GAVRILOV ALEXEI B ET AL) 11 December 2001 (2001-12-11)
- D4: EP-A-0 971 432 (WILSON GREATBATCH LTD) 12 January 2000 (2000-01-12)
- D5: US-B1-6 210 839 (GAN HONG ET AL) 3 April 2001 (2001-04-03)
- D6: US-A-6 136 477 (GAN ET AL) 24 October 2000 (2000-10-24)

D1 discloses Li/S cell comprising a lithium anode, a sulfur cathode, a separator, an electrolyte, containing LiNO_3 (see D1, fig. 2, 100% Sulfur as cathode, 100% Li as anode, separator, column 3, line 55-57, column 4, lines 1-17). The disclosure of D1 is novelty destroying for the subject-matter of the present claims 1-11, 21-25. Moreover, they suggest the subject-matter of claims 17-20, 26 and 27, since the selection of the embodiments of said claims does not solve any problem of the state of the art.

D2 discloses Li/S cell comprising a lithium anode, a sulfur cathode, a separator, an electrolyte, containing nitromethane and Li salts (see D2, claims 1, 12, 24, page 11, lines 18-30, page 17, lines 19-28, page 19, line 28, lines 32-33, page 20, lines 13-15, page 22, lines 22-25). The disclosure of D1 is novelty destroying for the subject-matter of the present claims 1-10, 14, 15, 21-24. Moreover, they suggest the subject-matter of claims 17-20, 26 and 27, since the selection of the embodiments of said claims does not solve any problem of the state of the art.

D3 discloses Li/S cell comprising a lithium anode, a sulfur cathode, a separator, an electrolyte, containing Li salts (see D3 example 1). Said disclosure is novelty destroying for the subject-matter of the claims 1, 4-8, 21-24.

The subject-matter of the remaining claims application differs from the disclosure of D3 in that the electrolyte comprises a NO additive. Such additives are, however, well known in the fields of Li/S cells as disclosed in D4-D6. It is also noted that the alleged effect of the

NO additives is also described in D4-D6.

Finally, it is noted that the subject-matter of the present application can be considered a selection from the disclosures of D4-D6, where sulfides are also described as cathodic active material. A selection can be considered as involving an inventive step only if it presents unexpected effects or properties. However, no such effects or properties are indicated in the application. Hence, no inventive step is present in the subject-matter of claims 1-27.

Re Item VIII

Certain observations on the international application

Claims 1,4,5,6,7,8 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter in terms of the result to be achieved, i.e. the charge rate, the discharge rate, the efficiency which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

Moreover, there is no evidence that known batteries, such as disclosed by the prior art, should not also possess these parameters.

It is clear from the description for example pages 5, lines 20-21, page 6, lines 12 and fig.1 that the N-O additives are an essential feature to the definition of the invention.

Since independent claims 1 and 24 does not contain this feature they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.